(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
26 May 2005 (26.05.2005)

PCT

(10) International Publication Number
WO 2005/047908 A1

(51) International Patent Classification[7]: G01P 5/22

(21) International Application Number:
PCT/CA2004/001971

(22) International Filing Date:
16 November 2004 (16.11.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2,449,551 17 November 2003 (17.11.2003) CA

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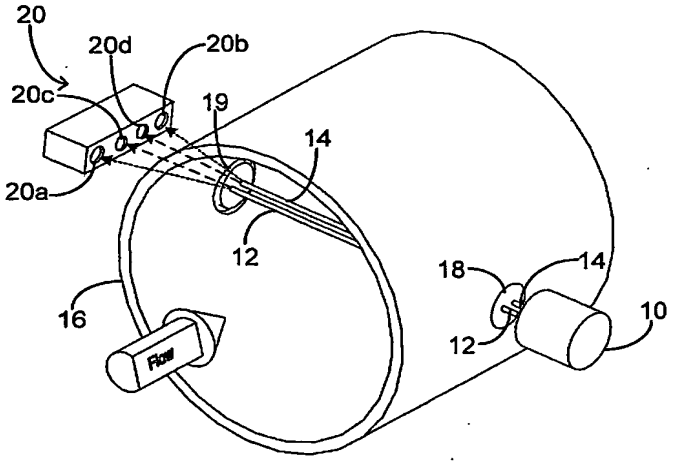
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*

[Continued on next page]

(54) Title: OPTICAL DEVICE AND METHOD FOR SENSING MULTIPHASE FLOW



(57) Abstract: The invention provides a method for measuring the velocity of a multiphase fluid flowing in a pipe. The method comprises directing at least two collimated beams of light from an illuminator through the multiphase fluid by means of transparent portions of the pipe, the at least two collimated beams spaced apart in a direction of flow of the multiphase fluid by a predetermined distance; detecting scattered, deflected and attenuated light with at least two photodetectors to produce at least two signals, the at least two photodetectors associated with the at least two collimated beams; calculating a cross-correlation function between the at least two signals to determine a time delay between the signals; and, calculating the average velocity of the multiphase fluid by taking the ratio of the predetermined distance to the time delay.

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— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

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